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EXAMINER

POLYANSKY, ALEXANDER

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,233	<b>Applicant(s)</b> OISHI, KEIICHIRO	
	<b>Examiner</b> ALEXANDER POLYANSKY	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19-110 is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 22-32, 63-66, 81-84, 90-92, 98, 102, 106 and 110 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                                       |                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                           | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

Continuation of Disposition of Claims: Claims withdrawn from consideration are 7-17,19-21,33-62,67-80,85-89,93-97,99-101,103-105 and 107-109.

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### **DETAILED ACTION**

Claims 1-17 and 19-110 are pending. Claims 7-17, 19-21, 33-62, 67-80, 85- 89, 93-97, 99-101,103-105 and 107-109 have been withdrawn. Claims 1-4, 22, 24, 81, 82-84, 90-92 and 102 have been amended. Claim 18 had been cancelled.

#### ***Status of Previous Rejections***

The 35 U.S.C. 112, second paragraph rejection of claims 3-4, 29-32, 64, 66, 82-83, 91-92, 98, 102, 106 and 110 as being indefinite has been withdrawn in view of the amendments to claims 3 and 4 filed June 23, 2010.

#### ***Information Disclosure Statement***

Despite the lack of pertinence to the instantly claimed invention, the information disclosure statement submitted on February 2, 2010 is in compliance with the provisions of 37 CFR 1.97 and had already been considered by the examiner (stamped February 17, 2010) in the previous office action dated February 23, 2010.

However, in order to ameliorate any communication discrepancies, the Examiner will again consider the information disclosure statement submitted on February 2, 2010.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-6, 22-32, 63-66, 81-84, 90-92, 98, 102, 106 and 110 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to

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reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claims 1-2, the amended feature “ $62 \leq [\text{Cu}] - 0.5[\text{Sn}] - \underline{3.5[\text{Si}] - 1.8 [\text{Al}]} \leq 90$ ” is not supported by the instant specification; therefore, it is new matter.

The only support provided with regard to the claimed formula as recited above is “ $62 \leq [\text{Cu}] - 0.5[\text{Sn}] - 3.5[\text{Si}] - 1.8 [\text{Al}] + [\text{Mn}] + [\text{Ni}] \leq 90$ ” as found in previously presented claim 3 has additional elements Mn and Ni, which the new amendment does not contain.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1-6, 22-32, 63-66, 81-84, 90-92, 98, 102, 106 and 110 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oishi et al. JP 10-152735 in view of Furukawa Electric JP 49040226A (abstract only) and in view of Hasegawa JP 61-048547.**

**Regarding claims 1-2,** Oishi teach a copper alloy material in wire form (title, abstract, and claims 1-5) comprises a composition including:

Element	Recited mass%	Oishi et al.	Overlap
Cu	62-91	62-69	62-69
Sn	0.01-4.00	0.2-1.0	0.2-1.0
Sb	0.02-0.25	0.02-0.15	0.02-0.15

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Ni	0.005-0.500	0.1-1.0	0.1-0.5
P	0.01-0.25	0.02-0.15	0.02-0.15
Zn	balance	balance	balance

In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists. See MPEP 2144.05(I). It would have been obvious to one skilled in the art to have selected the claimed range from the disclosed range of Oishi because Oishi has disclosed the same utility in the whole disclosed range.

Oishi does not teach the weight% of Si as recited in claim 1.

However, Furukawa teaches a copper alloy (abstract), wherein Furukawa added <1% Si (title and abstract). At the time of the invention it would have been obvious to a person of ordinary skill in the art to incorporate less than 1% Si in Oishi's steel to increase the corrosion resistance of the copper alloy as disclosed by Furukawa (title and abstract).

Oishi in view of Furukawa does not teach the weight% of Al as recited in claim 1.

However, Hasegawa teaches a copper alloy (abstract), wherein Hasegawa added 0.05-0.5% Al (title and abstract). At the time of the invention it would have been obvious to a person of ordinary skill in the art to incorporate 0.05-0.5% Al of Hasegawa in Oishi's in view of Furukawa copper alloy in order to inhibit a dezincification phenomenon (Hasegawa title and abstract).

With regard to the claimed formulas in claims 1-2, since Oishi teaches an overlapping composition of all the elements required in the formulas claimed, the claimed formulae are obvious in view of Oishi's teaching. The examiner's position is further supported by in re

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Cooper and Foley, which states that it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art. In re Cooper and Foley 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, Saklatwalla v. Marburg, 620 O.G. 685, 1949 C.D. 77.

In claim 1, assuming *arguendo* that the composition of the prior art has to meet the range defined by the formula, i.e. between 62 and 90, the Examiner selected ranges for Cu, Sn, Al, and Si as disclosed in Oishi in view of Furukawa and in view of Hasegawa and plugged them into the amended formula of claim 1 line 13 as follows:  $[65.2\%]\text{Cu}$  (Oishi table 1, No.1)  $-0.5*[0.5]\text{Sn}$  (Oishi table 1, No.1)  $-3.5*[0.5]\text{Si}$  (Furukawa, picked from a disclosed range)  $-1.8[0.5]\text{Al}$  (Hasegawa, picked from a disclosed range) = 62.3, which is within the claimed range. Thus, the claimed range specified by the formula is *prima facie* obvious over Oishi in view of Furukawa and in view of Hasegawa.

In claim 2, assuming *arguendo* that the composition of the prior art has to meet the range defined by the formula, i.e. between 62 and 90, the Examiner selected ranges for Sb, P, Cu, Sn, Al, and Si as disclosed in Oishi in view of Furukawa and in view of Hasegawa and plugged them into the amended formula of claim 2 line 7 as follows:  $[68.1\%]\text{Cu}$  (Oishi table 1, No.7)  $-0.5*[0.9]\text{Sn}$  (Oishi table 1, No.7)  $-3*[0.06]\text{P}$  (Oishi table 1, No.7)  $-0.5*[0.02]\text{Sb}$  (Oishi table 1, No.7)  $-3.5*[0.5]\text{Si}$  (Furukawa, picked from a disclosed range)  $-1.8[0.5]\text{Al}$  (Hasegawa, picked from a disclosed range) = 64.8, which is within the claimed range. Thus, the claimed range specified by the formula is *prima facie* obvious over Oishi in view of Furukawa and in view of Hasegawa.

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In claim 1, with regard to the claimed total area ratio of  $\alpha$ ,  $\gamma$ , and  $\delta$  phases is 95 to 100%, Oishi in view of Furukawa does not specify the phases or total area ratio; however, since Oishi in view of Furukawa and in view of Hasegawa teaches an overlapping composition and a substantially similar method of preparation by melt-solidification, rolling, casting as shown in instant specification pars. 17, 21, 30, etc., the phases and total area ratios as claimed would be expected in the alloy of Oishi in view of Furukawa and in view of Hasegawa. See MPEP 2112.01.

Furthermore, it is the examiner's position that the preamble of claim 1, "for forming a netted structure used in seawater under harsh conditions wherein the netted structure is exposed to water or waves running at high speed and rubbing", merely states the purpose or intended use of the invention, rather than any distinct definition of any of the claimed invention's limitations, therefore the preamble is not considered a limitation and is of no significance to claim construction. See MPEP 2111.02(II).

With regard to the amended feature "the copper alloy material forms an Al-Sn coating or a Si-Sn coating when in seawater" it is a product-by-process limitation. However, the invention is drawn to a product, a copper alloy material, and even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113. In the



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instant case, the process limitations in claim 1 recited in lines 14-15 is not considered on the merits.

**Regarding claims 3-4**, Oishi teaches addition of 0.1 to 1.0 mass% Ni (abstract), which overlaps the instantly claimed Ni range. Hasegawa teaches the addition of 0.05 to 0.5 Ni (abstract), which lies inside the claimed range.

With regard to the claimed formula, the Examiner's position is as stated above.

**Regarding claims 5 and 27**, with regard to the claimed total area ratio of  $\gamma$  and  $\delta$  phases is 10% or less, Oishi does not specify the phases or total area ratio; however, since Oishi teaches an overlapping composition and a substantially similar method of preparation by casting, the phases and total area ratios as claimed would be expected in the alloy of Oishi. See MPEP 2112.01.

**Regarding claims 6 and 28**, Oishi teaches an overlapping composition of Cu and Sn as required in the formula claimed, the claimed formulas are obvious in view of Oishi's teaching. The examiner's position is further supported by *in re Cooper and Foley*, which states that it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art. *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Saklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77.

**Regarding claims 22, 24, 81, and 84**, Oishi teaches the copper alloy material is a fish cultivation net (pars. 2-3), which meets the net or grid limitation.

**Regarding claim 23**, Oishi teaches the copper alloy material is a waved wire having curved portions, and the netted structure has a rhombically netted form made by arranging a

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large number of the waved wires in parallel such that the adjacent waved wires are entwined with each other at the curved portions (ref# 3a, fig. 1, par. 33).

**Regarding claim 25**, Oishi teaches the fish cultivation net includes a reinforcing frame attached along the lower edge of the net in a ring-shaped manner, and the reinforcing frame maintains the shape of the lower edge of the net and applies a downward tension to the net (ref# 2, fig. 1, par. 32).

**Regarding claim 26**, Oishi teaches the reinforcing frame is formed of a pipe made of the same copper alloy as the material forming the net (par. 32, fig. 1).

**Regarding claims 29 and 31**, with regard to the claimed total area ratio of  $\gamma$  and  $\delta$  phases is 10% or less, Oishi does not specify the phases or total area ratio; however, since Oishi teaches an overlapping composition and a substantially similar method of preparation by casting, the phases and total area ratios as claimed would be expected in the alloy of Oishi. See MPEP 2112.01.

**Regarding claims 30 and 32**, Oishi teaches an overlapping composition of Cu and Sn as required in the formula claimed, the claimed formulas are obvious in view of Oishi's teaching. The examiner's position is further supported by *in re Cooper and Foley*, which states that it is well settled that there is no invention in the discovery of a general formula if it covers a composition described in the prior art. *In re Cooper and Foley* 1943 C.D. 357, 553 O.G. 177; 57 USPQ 117, *Saklatwalla v. Marburg*, 620 O.G. 685, 1949 C.D. 77.

**Regarding claims 63-66**, Oishi teaches the copper alloy material is a wire. Oishi teaches the wire alloy is cast (par. 45 and etc.).

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Even though Oishi does not specify "plastic-processed" or "plastic processing," since the "plastic-processed" and "plastic processing" are processing limitations in product claims, they are not expected to impart distinctive structural characteristics to the copper alloy cultivation net as claimed over Oishi, the product-by-process steps of claims 63-66 do not lend to the determination of patentability of the copper alloy net, unless proven otherwise. See MPEP 2113.

**Regarding claims 82-83, 90-92, and 102,** Oishi teaches the copper alloy material is a fish cultivation net (pars. 2-3), which meets the net or grid limitation.

**Regarding claim 98,** Oishi teaches the copper alloy material is a waved wire having curved portions, and the netted structure has a rhombically netted form made by arranging a large number of the waved wires in parallel such that the adjacent waved wires are entwined with each other at the curved portions (ref# 3a, fig. 1, par. 33).

**Regarding claim 106,** Oishi teaches the fish cultivation net includes a reinforcing frame attached along the lower edge of the net in a ring-shaped manner, and the reinforcing frame maintains the shape of the lower edge of the net and applies a downward tension to the net (ref# 2, fig. 1, par. 32).

**Regarding claim 110,** Oishi teaches the reinforcing frame is formed of a pipe made of the same copper alloy as the material forming the net (par. 32, fig. 1).

### ***Response to Arguments***

Applicant's arguments filed June 23, 2010 have been fully considered but they are not persuasive.

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I. Applicant submits that the JP'735 Document does not teach, or even suggest, (i) "one or more elements selected from the group consisting of 0.02 to 1.5 mass% or Al, and 0.02 to 1.9 mass% of Si" as recited by independent claim 1. However, this is not the only deficiency in the disclosure of the JP'735 Document, which also does not teach, or even suggest, (ii) "the composition satisfies the relationship derived from the Cu content [Cu], the Sn content [Sn], the Al content [Al], and the Si content [Si], in terms of mass%,  $62 [\text{Cu}] - 0.5[\text{Sn}] - 3.5[\text{Si}] - 1.8[\text{Al}] \geq 90$ ," and (iii) "the copper alloy material forms an Al-Sn coating or a Si-Sn coating when in seawater" as recited by claim 1.

*In response*, the Examiner's position regarding the amended features is as stated above. With regard to the formulaic relationship, the Examiner's position is as stated above.

Oishi in view of Furukawa Electric and in view of Hasegawa teaches all the features as required by amended claim 1.

II. Applicant submits that the JP'735 Document does not have an overlapping composition with the copper alloy material recited by claim 1 as amended because, as conceded by the Examiner, the JP'735 Document does not teach, or suggest, the element Si in the composition. The Federal Circuit has stated that a chemical composition and its properties are inseparable so that a composition made from identical components as the invention, and made using the same or similar techniques as the invention, should produce products having the identical composition as the invention and the same properties as the invention absent evidence to the contrary. In re Spada, 15 U.S.P.Q.2d 1655, 1657-58 (Fed. Cir. 1990). In this case, however, contrary to Spada, the Examiner admits that the composition disclosed by the JP'735 Document is not identical to the composition of claim 1, as amended, because the JP'735

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Document does not teach, or suggest, Si as a component of the composition. Because the composition disclosed by the JP'735 Document is not identical to Applicant's claimed composition, the Examiner has no legal or factual basis for inferring that the metal alloy composition disclosed by the JP'735 Document inherently has the metal structure as claimed.

The Oishi Document is completely silent regarding the claimed relationships between alloying elements for wire material used to make a fish cultivation net. As would be understood by persons of ordinary skill in the art, the reason the Oishi Document does not teach, or suggest, the claimed relationships includes the fact that the Oishi Document tries to control effects from ocean waves, seawater, etc., by the net structure and the presence of a sacrificial anode.

***In response*** to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

It is Oishi in view of Furukawa Electric and in view of Hasegawa that teaches all the features as required by amended claim 1 and not Oishi taken singly.

Since the copper alloy of Oishi in view of Furukawa Electric and in view of Hasegawa meets the claimed copper alloy and all the recited features, the copper alloy of Oishi in view of Furukawa Electric and in view of Hasegawa would be capable of performing the required function as recited in the preamble of claim 1.

Additionally, simply because Oishi in view of Furukawa Electric and in view of Hasegawa does not specify the claimed relationships between alloying elements for wire material

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used to make a fish cultivation net does not mean that Oishi in view of the combination does not implicitly teach it.

III. Applicant submits that the presence of Al and Si as recited in claims 3 and 4 is important to developing corrosion resistance. The above-captioned application discloses that the addition of Al and Si has positive effects on erosion-corrosion resistance in high-speed moving water, and on corrosion resistance against rubbing of fish bodies and materials, and is involved in achieving excellent corrosion resistance under various harsh conditions encountered in seawater.

*In response*, with regard to the claimed Al and Si content, the Examiner's position is as stated above.

IV. Applicant submits that according to the JP'226 Document, (See Exhibit B, at 168, left col., lines 1-7), there is almost no improvement in corrosion resistance when either Ga (1-40 wt.%) or Si (0.1-15 wt.%) falls below the lower limit of the disclosed ranges for these two elements. In fact, the embodiment alloys nos. 1-7 listed in Table 1 on page 168 of the JP'266 Document each contain both Ga and Si without exception. Therefore, a person of ordinary skill in the art would understand that, according to the disclosure of the JP'266 Document, the mere presence of Si without Ga does not have, and/or is not expected to have, any influence on the corrosion resistance of the golden copper alloy. Therefore, the JP'266 Document does not teach, or suggest, that adding 1% Si to a copper alloy should increase corrosion resistance of the alloy as the Examiner contends (Office Action, February 23, 2010, at 6, lines 12-15) because the JP'266 Document is limited to golden copper alloys that include both Ga and Si.

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*In response*, the Examiner is not certain which part of exhibit B the Applicant is referring to, but even if, allegedly, the effect of Si in JP 49040226 is hinged on the presence of Ga, the disclosure of JP 49040226 still meets the claimed content of Si. The instant claims do not preclude Ga. As a matter of fact, the instant claims are open to all other elements and combinations not recited in the claims. Furthermore, even if the content of Si falls below the lower limit of the disclosed ranges of JP '226, the disclosed ranges still overlap the claimed ranges and are still *prima facie* obvious over the claimed ranges.

Additionally, the disclosure of JP '226 was simply used to show that addition of Si in copper alloys for corrosion resistance is known and, as stated above, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In summary, the combination of Oishi in view of Furukawa Electric and in view of Hasegawa teaches all the features as required by claim 1.

V. Applicant submits that as evident from Applicant's Tables 1 and 6, the average wear loss for example alloy nos. 101 to 206 is 27 mg/cm<sup>2</sup>, 137 mg/cm<sup>2</sup>, 77 mg/cm<sup>2</sup>, and 294 mg/cm<sup>2</sup>, under the test conditions of Test Condition I, of Test Condition II, of Test Condition III, and of Test Condition IV, respectively. On the other hand, the loss of example alloy nos. 301 to 305 and 401 to 404 is 25 mg/cm<sup>2</sup>, 112 mg/cm<sup>2</sup>, 65 mg/cm<sup>2</sup>, and 229 mg/cm<sup>2</sup>, under Test Conditions I to IV, respectively, revealing that the alloy nos. 301 to 305 and 401 to 404 are clearly substantially improved with respect to erosion-corrosion resistance. The difference between the present invention and subject matter closer to that of the present invention than the closest art of record

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(i.e., the Oishi Document) is more pronounced when the conditions are harsher. Furthermore, this substantially improved erosion-corrosion resistance exhibited by alloys of the present invention was unexpected.

In addition, example alloy no. 202 in Table 1 of the above-captioned application consists of Cu:63.4-Sn:0.5-Sb:0.7-Zn and is not an alloy in accordance with the present invention. Alloy no. 202 is a comparative alloy that is substantially similar to the alloy disclosed by the Oishi Document. Therefore, the erosion-corrosion test data obtained for example alloy no. 202, more likely than not, reflects the erosion-corrosion characteristics exhibited by the alloy disclosed by the Oishi Document.

The erosion-corrosion test results for example alloy no. 202, compiled from Table 1 of the above-captioned application, are as follows: 28 mg/cm<sup>2</sup>, 145 mg/cm<sup>2</sup>, 79 mg/cm<sup>2</sup>, and 313 mg/cm<sup>2</sup>, under the test conditions of Test Condition I, of Test Condition II, of Test Condition III, and of Test Condition IV, respectively. These results are substantially inferior to those for example alloy nos. 301 to 305 and 401 to 404 of the present invention. In fact, all of the nine alloys, from example alloy nos. 301 to 305 and 401 to 404, show lower wear loss than example alloy no. 202 in every tested condition. In view of the substantially improved and unexpected erosion-corrosion resistance of the invention alloys compared to example alloy no. 202 (which is substantially similar to the alloy disclosed by the Oishi Document), Applicant has shown a clear, substantial difference between the invention alloys as claimed and the alloys disclosed by the Oishi Document (i.e., the closest prior art). Accordingly, although corrosion resistant may also depend on other factors such as (i) metal structure, (ii) Sn content, and (iii) the relationships between Cu, Sn and the other alloying elements, a person of ordinary skill in the art should still



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conclude that the presence of Al and/or Si in a small amount unexpectedly imparts excellent corrosion resistance under conditions equivalent to the erosion-corrosion test, which represents how the alloy material should be affected by sea water, or by ocean waves moving at high speed, or by rubbing of wires made of the alloy against one another.

In sum, assuming *arguendo* that the Examiner has established a *prima facie* case of obviousness against Applicant's claimed invention (which is an invalid assumption), Applicant's evidence of substantially superior and unexpected erosion-corrosion resistance with respect to example alloy no. 202 (which is substantially similar to the alloy disclosed by the Oishi Document) is sufficient to overcome the alleged *prima facie* case.

***In response***, firstly, although the Examiner appreciates the extensive data provided in the instant specification (i.e. tables, examples, etc.) to support the allegations of superior and unexpected results, the Examiner is not convinced that the copper alloy of Oishi in view of Furukawa Electric and in view of Hasegawa would not be as operable in harsh conditions because the Applicant has only alluded to a single data point, i.e. alloy 202, which only appears to be inferior to those for example alloy nos. 301 to 305 and 401 to 404 of the present invention. Then, the 202 alloy is Applicant's own alloy and not what the Applicant deems as closest prior art.

The tables 1-6 that the Applicant relies upon to show unexpected results display several key variables which are not claimed in the instant independent claim. For example, the content of Sb is not claimed, but is relied upon in the tables for alloys 301 to 305 and 401 to 404 which in turn have the noted unexpected erosion-corrosion values. Further, Y1 to Y8 and Y9 compositional values which clearly have an impact on the characteristics of the copper alloy

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material are also not claimed in claim 1. The area ratio of  $\alpha+\gamma+\delta$  in instant table 1 for alloys 301 to 305 and 401 to 404 is 100%, whereas the claimed area ratio is 95 to 100. What happens to alloys 301 to 305 and 401 to 404 at 95-99%? Further, the area ratio of  $\gamma+\delta$  is also not claimed but is in instant table 1 and relied upon for arguments since it is part of alloys 301 to 305 and 401 to 404.

These and other values which are displayed in the instant tables 1-6 and not claimed in claim 1 render the arguments not commensurate with the scope of the claims the Applicant had argued proves unexpected results.

It is difficult to invalidate the combination of Oishi in view of Furukawa Electric and in view of Hasegawa with a single point (i.e. alloy 202) picked out of a broadly claimed subject matter that is the claimed invention.

Thus, before the Applicant considers arguing unexpected results, it may behoove the Applicant to first, compare the instant invention with the closest prior art (which may be what the Applicant considers to be closest), and if the alloy exhibits unexpected results due to the addition of other constituents such as Sb,

Secondly, Oishi in view of Furukawa Electric and in view of Hasegawa discloses a range of Cu, Sn, Al, and Si that meets the instant claims and because the copper alloy of Oishi in view of Furukawa Electric and in view of Hasegawa is also prepared in a substantially similar manner to that of the instant invention, one of ordinary skill in the art would also expect similar behavior and properties from the copper alloy of Oishi in view of Furukawa Electric and in view of Hasegawa as compared to the disclosed invention.

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Accordingly, Oishi in view of Furukawa Electric and in view of Hasegawa still meets the claimed copper alloy, formulas, and properties as claimed in the instant claims.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER POLYANSKY whose telephone number is (571)270-5904. The examiner can normally be reached on Monday-Friday, 8:00 a.m. EST - 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on 571-272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alexander Polyansky/  
Examiner, Art Unit 1793

/Jessica L. Ward/  
Supervisory Patent Examiner, Art Unit 1793